Appendix G

Arkansas K-12 Science Standards

Frequently Asked Questions

Q. What is the process for revising and adopting curriculum standards in Arkansas?
A:

- The periodic review and revision of academic content standards is outlined in law and rule for the Arkansas Department of Education.
- A committee of K-12 teachers and instructional facilitators, assisted by higher education content experts, will be charged with creating Arkansas's K-12 Science Standards. The State Board of Education gave the ADE – Curriculum and Instruction Unit an ENDORSEMENT of the Next Generation Science Standards (NGSS) and the research behind the development of these standards. This body of work will guide the work of Arkansas educators in the development of our standards.
- Surveys and an external expert review are also part of this process. The educators engaged in the work will make recommendations to the ADE for possible course pathways and grade-specific student performance expectations, which will then be taken to ADE leadership for consideration.
- More information about the work is posted on the Curriculum and Instruction page on the ADE website (http://www.arkansased.org/divisions/learning-services/curriculum-and-instruction/arkansas-k-12-science-standards).

Q: What science standards are required to be taught at least through next year?
A: Arkansas Science Curriculum Frameworks, Revised in 2005, which can be found on the ADE website (see resources below), will be taught until implementation of the new standards. The timeline with projected dates can be found on the ADE website (see resources below).

Q: What science assessments will be administered at least through next year?
A: ADE will continue to administer the Science Benchmark Exam at Grades 5 & 7, the End-of-Course Biology Exam, and the Alternate Portfolio Assessments for Grades 5, 7, and 10. Information about these assessments can be found on ADE's website (see resources below).

Q: Why are new standards not being implemented immediately?
A: Successful development and implementation of science standards requires time and careful planning for major shifts in areas such as professional development, instructional materials, curriculum development, assessments, and new teacher preparation. Time is also needed to allow Arkansas educators the opportunity to fully investigate the latest body of research on quality science education. The timeline spells out the projected dates for implementation (see resources below).

Q: What are the Next Generation Science Standards (NGSS)?
A: NGSS are K–12 science standards that are rich in content and practice and designed to provide all students an internationally benchmarked science education. The NGSS are based on *A Framework for K–12 Science Education* which was published by the National Research Council, and is available as a free download (see resources below). The final version was released in April, 2013 and is available on the Web (see resources below).

Q: Who was involved in the development process?
A: NGSS was developed for states, by states. In addition to the 26 lead states, one of which was Arkansas, other critical partners were actively engaged in the development and review of the new standards, including the National Research Council (NRC), the National Science Teachers Association (NSTA), and the American Association for the Advancement of Science (AAAS). Writing and review teams consisted of K-12 teachers, state science and policy staff, higher education faculty, scientists, engineers, cognitive scientists, and business leaders. Achieve Inc., a non-profit education organization, managed the process on behalf of the lead states.

Q: What are the strengths of the NGSS?
A:

- NGSS are college and career ready standards.
- Science, engineering, and technology permeate nearly every facet of modern life and hold the key to meeting many of our most pressing current and future challenges. Engineering design and application and the use of technology are included in the NGSS at all grade levels.

Q: What is the connection between NGSS and the Common Core State Standards (CCSS)?
A: The NGSS are science content standards and CCSS are standards in Mathematics, English Language Arts, and Grades 6-12 literacy standards for Science and Technical Subjects. Literacy skills are critical to building knowledge in science and math is considered the language of science. Therefore, CCSS complement, but do not replace, content standards in other disciplines. NGSS also include connections to pre-requisite and co-requisite CCSS math and English language arts/literacy standards. An effort has been made to ensure, in particular with CCSS Mathematics, that the skills that will be needed in the science classroom have been taught in a previous year where possible. Therefore, all science teachers need an understanding of the CCSS. For more detailed information, see NGSS Appendices on the NGSS Website (see resources below).

Q: Will future science assessments be similar to the Partnership for Assessment Readiness for College and Careers (PARCC) assessments?
A: It is too early to determine the structure of future science assessments**.** Arkansas currently holds membership in several state-led organizations that are discussing the future of science assessment.

Q: What can educators do to prepare for the transition to new science standards?
A:

- Assess educator weaknesses/strengths in science content knowledge and develop a continuing education plan.
- Participate in appropriate PD around *A Framework for K-12 Science Education*.
- Evaluate and inventory the science resources currently available in your district/school.
- Ensure that sufficient time is allotted in the school day for hands-on science instruction.
- Begin to incorporate the practices and crosscutting concepts from *A Framework for K-12 Science Education*. Resources are available from the NSTA. (See resources below)
- Increase collaboration within your science department and across disciplines in your district/school.
- Utilize the science specialists at your local educational cooperative and/or university STEM center for professional development offerings.

Q. What is the best method for staying up-to-date with Arkansas' progress toward new science standards?
A: Information about the development of and transition to new science standards will be sent out through ADE's CCSS Listserv. Sign up to receive e-blasts by sending an email to Abby Cress at abby.cress@arkansas.gov. Information is also currently available at http://www.arkansased.org/divisions/learning-services/curriculum-and-instruction/arkansas-k-12-science-standards

Resources
ADE Student Assessment: http://www.arkansased.org/divisions/learning-services/student-assessment
A Framework for K-12 Science Education: http://www.nap.edu/catalog.php?record_id=13165
Official site for NGSS: http://www.nextgenscience.org/
Achieve Inc.: http://www.achieve.org/next-generation-science-standards
National Science Teachers Association (NSTA): http://www.nsta.org/about/standardsupdate/default.aspx
ADE Science Frameworks, revised in 2005: http://tinyurl.com/cyqatr6
CCSS: http://corestandards.org
ArkansasIDEAS Professional Development CCSS portal: http://ideas.aetn.org/commoncore
List of Cooperatives: http://www.arkansased.org/contact-us/education-service-cooperatives
List of STEM Centers: http://www.arkansasstemcoalition.com/partners/arkansas-stem-centers/
Arkansas K-12 Science Standards Development/Implementation Timeline: http://goo.gl/Km39Qf